Remarks

Applicants request reconsideration of the final office action, as follows.

Status of Claims

Claims 1-34 are pending in the present application.

Summary of Claimed Subject Matter

Applicants' Claim 1 may be read on the following, exemplary embodiment of the invention as follows:

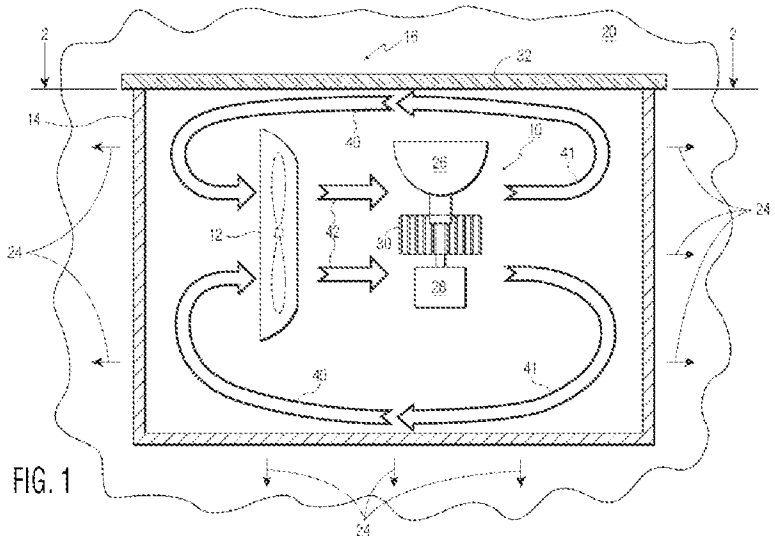


FIG. 1

Claim 1 in italics as read on foregoing figure:

1. *A light appliance and a cooling arrangement, comprising:*

   a) *a light appliance [10];*

   b) *a liquid-tight enclosure [16] for the light appliance that gives off unwanted heat into surrounding air within the enclosure during operation, the enclosure having an external wall [14] at least part of which is thermally conductive;*

   c) *a medium [20] that is in contact with said external wall of the enclosure; the medium*

      i) *having adequate thermal conductivity; and*

      ii) *being sufficiently cooler than the external wall of the enclosure*

that an air circulating device [12] for circulating air, heated by the light appliance or by the air circulating device, to the thermally conductive portion of the external wall removes sufficient heat from the air by dissipating the heat into the cooler medium through said thermally conductive portion so as to substantially increase lifetime of the light appliance.

The thermodynamic principles underlying Element (c) of the foregoing claim are expressed in the specification at P. 4, Lines 24-28, for instance, which teaches:

> Of course, the fan does not bring in cool ambient air and exhaust heated air, as in a normal open-air system. Instead it only circulates the air sealed within the sealed environment, which works due to the conductive nature of the sealed environment's walls which are in contact with a medium that is much cooler than the light source and/or heat sink which is to be cooled.

The foregoing teaching stresses the "conductive nature of the sealed environment's walls" and the "medium that is much cooler than the light source and/or the heat sink which is to be cooled."

Grounds of rejection

All pending claims (i.e., Claims 1-34) stand rejected under 35 USC 103 (a) as unpatentable over USP 4,419,716 to Koo (hereinafter "Koo") in view of USP 5,432,688 to Tobias et al. (hereinafter "Tobias").

ARGUMENT

1. Proposed modification of Koo's assembly is not suggested since it would require substantial reconstruction and redesign of such assembly and would change basic principles of operation of the assembly relating to leak detection.

Lack of motivation to modify a prior art structure occurs if substantial reconstruction and redesign of the prior art structure would be required and together with a change of basic principles of operation. *In re Ratti,* 270 F.2d 810, 813, 123 USPQ 349 (CCPA 1959) (cited with approval in *Ex Parte Tommy J. Shane,* decision of the Board of Patent Appeals and Interferences, Application No. 10/269,369, Appeal No. 2005-1115, 2005 WL 2250564 at *3; *Ex Parte George A. Cavigelli*, decision of the Board of Patent Appeals and Interferences, Application No. 09/289,076, Appeal No. 2002-0558, 2003 WL 23174998 at *5; *Ex Parte Mark W. Heaton*, decision of the Board of Patent Appeals and Interferences, Application No. 09/173,497, Appeal No. 2001-2565, 2002 WL 32334592 at *3; and *Ex Parte H. Worth Love*,

Application No. 09/075,631, Appeal No. 1999-1960, 1999 WL 33263299 at *3 [Bd. Pat. App. & Interf., Jan 01, 1999]); *see generally* MPEP § 2143.01 - VI (Rev. 3, Aug. 2005).

It is instructive to consider the facts of the *Ratti* case. In that case, the invention of Claims 1, 4 and 7 concerned an oil sealing comprising a "bore-engaging mounting portion of resiliently deformable material." *Ratti*, 270 F.2d at 810 (Claim 1). Claim 1 of inventor Ratti recited "a plurality of axially extending outwardly biased spring fingers in outwardly clamped engagement with said bore-engaging portion." The outwardly biased spring members continually press the resiliently deformable material—such as rubber—onto the inner surface of a bore. This overcame the problem of the resilient deformable material losing its resiliency.

The *Ratti* Court disapproved of the examiner's following, proposed combination. The examiner in the *Ratti* case cited a primary reference showing a type of oil seal used in a bore that differed from the Ratti oil seal. The primary reference showed a "reinforced and 'stiffened' sealing member formed of a material such as rubber." *Ratti,* 270 F.2d at 811. Reinforcement was done with a cylindrical sheet metal reinforcing member. *Id. a*t 812. The examiner proposed modifying the primary reference to "replace the cylindrical sheet metal reinforcing member, which is secured to the [primary reference's] sealing member, by an annular set of outwardly biased spring fingers shown by [a secondary reference]" *Id.* at 812. The *Ratti* Court held that the resilient element in the primary reference "is so 'stiffened' that the use of the resilient spring fingers of the [secondary reference] could not possibly increase the resilient deformation of the [primary reference's] seal in the direction of the bore or increase the sealing engagement of the seal with the bore." *Id.* at 813. In this regard, the *Ratti* Court ruled:

> We hold, further, that the combination of [the secondary reference] with [the primary reference] is not a proper ground for rejection of the claims here on appeal. The suggested combination of references would require a substantial reconstruction and redesign of the elements shown in [the primary reference] as well as a change in the basic principles under with the [primary reference's] construction was designed to operate.

Ratti, 270 F.2d at 813.

Here, the examiner proposes to combine the assembly of Koo with Tobias so as to make liquid-tight Koo's housing assembly for isolating an electrical device from the ambient atmosphere. Examiner suggests that a person of ordinary skill in the art would be motivated to make Koo's assembly liquid-tight by referring to Tobias that shows an electrical lamp enclosed in a liquid-tight underwater enclosure. Examiner refers to Tobias for "a gasket 82, which cooperate to prevent water from entering the shell 54" and "a cable seal 84 is provided to

prevent water from entering the shell 54 at the point of entry of the power cable 74." Office Action at P. 3.

However, to make Koo's assembly liquid-tight requires far more than merely making a gasket and cable seal liquid-tight as the examiner suggests. To make Koo's assembly liquid-tight would require a substantial reconstruction and redesign of the elements of Koo's assembly and would change basic principles of operation of Koo's assembly relating to leak detection.

Koo's assembly "relates to a * * * combination sealed vapor proof housing assembly and system for isolating an electrical device within an enclosed [gaseous] atmosphere, cooling the enclosed atmosphere and *for automatically detecting the presence of a leak between the enclosed atmosphere and the ambient atmosphere*." Col. 1, Lines 5-11 (emphasis added). Koo is particularly concerned with isolating electrical lamps "which give off substantial energy in the form of heat [and] are potentially hazardous to use in an atmosphere containing gasoline fumes or other explosive vapors." Col. 1, Lines 13-16. Typical examples of such atmospheres with volatile or explosive vapors are "an airplane hangar or mine field." Col. 1, Lines 16-17.

In his following summary of invention, Koo reiterates a preeminent concern of his for automatically detecting leaks and responsively disabling the electrical device:

> The housing assembly of the present invention comprises a sealed enclosure for isolating an electrical device within a protective atmosphere and a cooling system for transferring heat from the protective atmosphere to the ambient atmosphere in order to maintain the temperature of the sealed housing within safe limits. *The housing assembly and system of the present invention further includes means for detecting the existence of a leak between the enclosed atmosphere and the ambient atmosphere and means for disabling the electrical device in response to the presence of such a leak.* The latter feature provides assurance that the housing assembly is truly sealed and leak free.

Col, 1, Lines 42-54 (emphasis added). Koo teaches that his leak detection and resulting electrical disabling feature "provides assurance that the housing assembly is truly sealed and leak free." *Id.* This would be particularly important when Koo's assembly operates—as intended—"in an atmosphere containing gasoline fumes or other explosive vapors." Col. 1, Lines 13-16. In such an atmosphere, entrance of explosive vapors into Koo's assembly could prove disastrous.

In connection with Koo's preeminent concern of automatic leak detection and resulting electrical disabling, Koo teaches the following three structural features of his assembly referring to the following Figures 3 and 4:

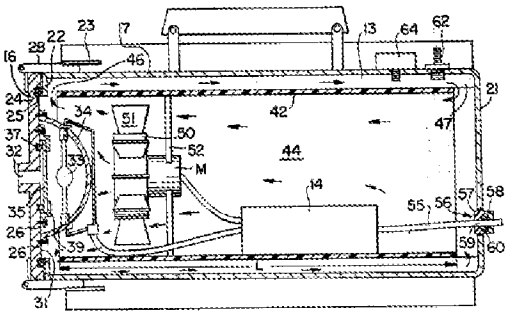


FIG. 3

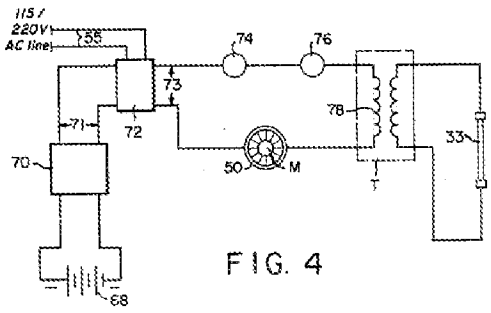


FIG. 4

1. A pressure gage 64 (Fig. 3) to monitor the interior atmospheric pressure of the assembly.

2. A pressure-actuated switch 74 (Fig. 4) that shuts off the power to the electrical device 33 (e.g., lamp) if the interior pressure of the assembly falls below a predetermined level.

3. An air valve 62 (Fig. 3) which permits the air to be pumped in to the assembly.

In order to realize his preeminent concern that his assembly is "truly sealed and leak free," as stated above in his summary of the invention, Koo teaches the ingenious use of a pressure-actuated switch 74. When such switch senses a *drop in pressure* in the interior of the assembly, it cuts off power to the lamp within the assembly. As shown below, making Koo's assembly liquid-tight will destroy the ability of Koo's assembly to automatically detect a leak in the assembly and responsively disable the lamp.

Regarding his pressure-actuated switch 74, Koo teaches that "[t]he pressure actuated switch 74 is a conventional device which in its simplest form represents two contacts spaced apart and enclosed within a flexible diaphragm responsive to pressure within the enclosure." Col. 4, Lines 45-49. As Koo teaches, "[w]hen the pressure in the enclosure 13 increases to a predetermined level the diaphragm collapses to keep the contacts closed." Col. 4, Lines 50-52. "Any leak within the enclosure"—Koo teaches—"will decrease the pressure and cause the pressure actuated switch to open thereby opening up the series circuit and removing power from the lamp 33." Col. 4, Lines 60-63.

As is clear from the foregoing teaching of Koo, his pressure-actuated switch will become closed "[w]hen the pressure in the enclosure 13 increases to a predetermined level." Col. 4, Lines 50-52. That is, his lamp 33 will become powered only in the presence of a pressurized

interior of his assembly. Thus, as is a necessity, Koo's only disclosed embodiment is "pressurized." Col. 4, Lines 13-14.

The following briefly states three reconstruction or redesign issues in the examiner's proposed combination: (1) Koo's air valve 62 would need to be removed, and (2) his pressure-actuated switch 74 would need to be removed, or else, alternatively, (3) the interior pressure of Koo assembly's would need to be maintained through extraordinarily cumbersome steps. These three points are discussed in more detail as follows.

First, in order to make Koo's assembly "liquid-tight," the air valve 62 of Koo's assembly would need to be removed or disabled. Koo teaches that his air valve 62 is a "one-way air valve" (Col. 4, Line 14). Koo teaches that the air valve "is of conventional design e.g., a conventional tire valve which permits air to be pumped into the enclosure 13 from a supply (not shown) using any conventional pumping mechanism." Col. 4, Lines 17-19. Air valve 62 precludes a liquid-tight nature of Koo's assembly since any pressure outside the assembly—from being underwater, according to the examiner's suggested combination—that exceeds the assembly's interior pressure would open the one-way valve and allow water to enter. This would create dangerous electrical shock hazards in water surrounding the assembly as well as cause conditions for lamp failure.

Second, deleting the air valve from Koo's assembly deletes the practical ability to re-pressurize the interior of Koo's assembly. This necessitates either removing pressure-actuated switch 74 or maintaining the interior pressure in Koo's assembly.

Air valve 62 allows repressurizing the interior of Koo's assembly—which would be required if Koo's pressure-actuated switch 74 is kept—in the view of the ever-present possibility of leaks acknowledged by Koo. E.g., Col. 1, Lines 49-54 and Col. 4, Lines 13-56. If the pressure in the interior of Koo's assembly drops below a threshold level, pressure-actuated switch 74 cuts off electrical power to the lamp. In other words, switch 74 automatically detects leaks by detecting a drop in interior housing pressure. To keep the lamp powered-up would require eliminating Koo's automatic leak detection by either removing switch 74, or alternatively by keeping the pressure in Koo's assembly sufficiently high that pressure-actuated switch 74 never detects a drop in pressure below the mentioned threshold level.

However, if Koo's pressure-actuated switch is retained and the air valve (for re-pressurizing the assembly) removed, then extraordinarily cumbersome steps are required to maintain the pressure in Koo's assembly. Maintaining such increased pressure applies to many

phases of manufacturing, delivery and servicing the assembly. Thus, the assembly would need to be manufactured in a pressurized environment in order to increase the assembly's interior pressure above the above-mentioned threshold level. During any storage of the assembly and shipping of the assembly to a customer, the interior pressure of the assembly would need to be maintained. Maintaining such pressure would also be required for routine maintenance such as replacing a failed lamp. That the foregoing steps of maintaining pressure would be needed follows from Koo's above-mentioned repeated acknowledgement of the possibility of leaks and Koo's preeminent concern with automatically detecting leaks and disabling his lamp in the presence of a leak. The foregoing steps are unusual and extraordinarily cumbersome.

The foregoing reconstruction and redesign of Koo's assembly—required by the examiner's proposed combination—goes beyond mere routine skill in the art. It would further change the basic principles of Koo's ability to automatically detect leaks for "assur[ing] that the housing assembly is truly sealed and leak free" (Col. 1, Lines 48-54), by negating those principles. Under the *Ratti* case, the "combination" is improper (*In re Ratti,* 270 F.2d at 813 [quoted above at P. 9]), so the rejection should be withdrawn.

2. Alternatively, proposed modification of Koo's assembly is not suggested since the it would render the Koos' assembly unsatisfactory for its intended purpose relating to leak detection.

Alternatively, lack of motivation to modify a prior art structure exists if the proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose. *McGinley v. Franklin Sports, Inc.*, 262 F.3d 1339, 1355-56, 60 USPQ 2d 1001 (Fed. Cir. 2001) (holding that evidence showing that proposed modification of reference invention would render that invention "inoperable" supports jury verdict of lack of obviousness); *Tec Air. Inc. v. Denso Manufacturing Michigan Inc.,* 192 F.3d 1353, 1360, 52 USPQ 1294 (Fed. Cir. 1999) (holding that inoperability of the proposed combination for its intended purpose teaches away from combination); *In re Gordon,* 733 F.2d 900, 902, 221 USPQ 1125 (Fed. Cir. 1984) (holding that "inoperab[ility]" of proposed modified apparatus overcomes obviousness rejection); *see generally* MPEP § 2143.01 - V (Rev. 3, Aug. 2005).

As the first argument presented above makes clear, the examiner's proposed modification would thwart Koo's preeminent concern for the ability to automatically detect leaks and responsively disable his lamp. The resulting assembly no longer would have the ability to detect leaks. This is because Koo's pressure-actuated switch 74 would either need to be

removed or else the pressure in the interior of Koo's assembly would need to be kept above the threshold level needed to actuate the switch. As such, Koo's ability to detect leaks, which relies on the ability of switch 74 to detect a drop in pressure, would become inoperative. Under the principles of *McGinley v. Franklin Sports, supra, Tec Air. Inc., supra, and In re Gordon, supra,* the examiner's proposed rejection is improper, and should be withdrawn.

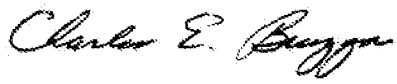
Conclusion

Based on either of the foregoing points of argument, the examiner's rejection of Claims 1-34 under 35 USC 103 (a) as unpatentable over Koo in view of Tobias et al. should be withdrawn.

I certify that the foregoing document and any document(s) referenced below are being filed electronically with the USPTO using the private PAIR system on the date stated below.

Dated: April 13, 2006

Respectfully submitted,



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